

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE  
BOARD OF PATENT APPEALS AND INTERFERENCES**

**APPELLANT:** Colson et al.  
**SERIAL NO.:** 09/869,941  
**FILED:** 04 January 2002  
**FOR:** Non Woven Fabric and Method and Apparatus for  
Manufacturing Same  
**EXAMINER:** Befumo, J.L.  
**GROUP:** 1771  
**CONF. NO.:** 4413

Board of Patent Appeals and Interferences  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPEAL BRIEF UNDER 37 C.F.R. §1.192**

**Introduction**

Appellant respectfully appeals the Final Rejection issued by Examiner Befumo dated May 18, 2006, rejecting claims 158-199, i.e., all of the claims remaining in the present application. This appeal is directed to these claims.

This is Appellant's second appeal of the rejected claims, and it is being filed in response to a new ground of rejection made by the Examiner in response to the previously filed appeal brief. No fee is believed to be due for this filing, as the previously paid fee has not been changed. A telephone interview with Examiner Befumo to discuss the new rejection (Sabee) was conducted on August 24, 2006, but no agreement was reached regarding the same.

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**(i) Real party in interest:**

The real party in interest in this appeal is Hunter Douglas, Inc., the assignee of the subject application.

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**(ii) Related appeals and interferences:**

Appellant hereby confirms that there are no related prior or pending appeals and/or interferences regarding this application. Likewise, there are no prior or pending related judicial proceedings. Appellant has filed a continuation application, now pending as U.S.S.N. 11/352,551.

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**(iii) Status of claims:**

Claims 158-199 are being appealed. The status of all claims filed in this application is as follows:

1-157. (Cancelled).

158. (Rejected) A nonwoven fabric comprising:  
a first layer of substantially parallel first yarns; and  
a second layer of substantially parallel second yarns;  
the first and second yarns being substantially perpendicular to one another and the first and second layers being adhered together with an adhesive, wherein:

- (a) the adhesive is applied to one side of the first layer of substantially parallel yarns in a discontinuous manner;
- (b) the adhesive forms random bridges between substantially parallel yarns of the first layer; and
- (c) the adhesive is located substantially only between the first and second layers of the adhered together substantially perpendicular yarns.

159. (Rejected) The nonwoven fabric of claim 158, wherein the adhesive is on only one side of the first yarns.

160. (Rejected) The nonwoven fabric of claim 159, wherein the substantially parallel first yarns in the first layer are held together to form a sheet by the bridges of the adhesive which prevent twisting of the individual first yarns in the first layer.

161. (Rejected) The nonwoven fabric of claim 159, wherein the adhesive is on the one side of the first yarns at a level of from about 5 weight percent to about 25 weight percent, based upon the total weight of the sheet of the first yarns.

162. (Rejected) The nonwoven fabric of claim 161, wherein the total weight of the sheet of the first yarns is about  $50 \text{ g/m}^2$  and the adhesive weight is about 2 to  $15 \text{ g/m}^2$ .

163. (Rejected) The nonwoven fabric of claim 161, wherein the total weight of the sheet of the first yarns is about  $50 \text{ g/m}^2$  and the adhesive weight is about 5 to  $10 \text{ g/m}^2$ .

164. (Rejected) The nonwoven fabric of any one of claims 158-163, wherein the first yarns are selected from the group consisting of polymer fibers, natural fibers, synthetic fibers, composite fibers, carbon fibers, glass fibers, metallic fibers and graphite.

165. (Rejected) The nonwoven fabric of claim 164, wherein the polymer fibers are selected from the group consisting of polyester, polyethylene, rayon, polypropylene and nylon fibers.

166. (Rejected) The nonwoven fabric of claim 164, wherein the natural fibers are selected from the group consisting of cotton fibers and wool fibers.

167. (Rejected) The nonwoven fabric of claim 164, wherein the metal fibers are selected from the group consisting of copper, gold, aluminum, silver and platinum.

168. (Rejected) The nonwoven fabric of claim 164, wherein one or more of the first yarns are glass fibers.

169. (Rejected) The nonwoven fabric of any one of claims 158-163, wherein the substantially parallel first yarns have been formed in a warp-direction and supported and bonded on only one side by the adhesive.

170. (Rejected) The nonwoven fabric of claim 169, wherein the adhesive has been applied to the first yarns by dip/nip saturation, spraying, gravure coating, or kiss coating.

171. (Rejected) The nonwoven fabric of claim 170, wherein the adhesive has a thickness of about 0.25 mil to about 1 mil.

172. (Rejected) The nonwoven fabric of claim 170, wherein the adhesive is a heat activatable adhesive.

173. (Rejected) The nonwoven fabric of claim 172, wherein the adhesive is a hot melt adhesive.

174. (Rejected) The nonwoven fabric of claim 173, wherein the adhesive is a hot melt copolyester polymer.

175. (Rejected) The nonwoven fabric of claim 170, wherein the adhesive is a scrim or lace web of adhesive or a meltblown adhesive.

176. (Rejected) The nonwoven fabric of any one of claims 158-163, wherein the adhesive is from about 5 to 20 percent by weight of the total weight of the fabric.

177. (Rejected) The nonwoven fabric of claim 176, wherein the adhesive is from about 10 to 15 percent by weight of the total weight of the fabric.

178. (Rejected) The nonwoven fabric of any one of claims 158-163, wherein the second yarns extend at an angle of about 80 degrees to about 89.7 degrees relative to the first yarns.

179. (Rejected) The nonwoven fabric of claim 178, wherein the second yarns extend at an angle of about 85 to about 89.7 degrees relative to the first yarns.

180. (Rejected) The nonwoven fabric of any one of claims 158-163, wherein the first yarns are equally spaced apart and the second yarns are equally spaced apart.

181. (Rejected) The nonwoven fabric of any one of claims 158-163, wherein the first layer and/or the second layer has a density of at least 40 yarns per inch in a transverse direction of the yarns.

182. (Rejected) The nonwoven fabric of claim 181, wherein the first layer and/or the second layer has a density of between 40 and 140 yarns per inch in a transverse direction of the yarns.



183. (Rejected) The nonwoven fabric of claim 182, wherein the first layer and/or the second layer has a density of between 60 and 100 yarns per inch in a transverse direction of the yarns.

184. (Rejected) The nonwoven fabric of claim 183, wherein the first layer has a density of 40 to 90 yarns per inch of 30/1 to 36/1 count yarn.

185. (Rejected) The nonwoven fabric of claim 183, wherein the second layer has a density of 90 to 140 yarns per inch of 36/1 count yarn.

186. (Rejected) The nonwoven fabric of claim 164, wherein the second yarns are selected from the group consisting of polymer fibers, natural fibers, synthetic fibers, composite fibers, carbon fibers, glass fibers, metallic fibers and graphite.

187. (Rejected) The nonwoven fabric of claim 186, wherein the polymer fibers are selected from the group consisting of polyester, polyethylene, rayon, polypropylene and nylon fibers.

188. (Rejected) The nonwoven fabric of claim 186, wherein the natural fibers are selected from the group consisting of cotton fibers and wool fibers.

189. (Rejected) The nonwoven fabric of claim 186, wherein the metal fibers are independently selected from the group consisting of copper, gold, aluminum, silver and platinum.

190. (Rejected) The nonwoven fabric of claim 186, wherein one or more of the second yarns are glass fibers.

191. (Rejected) The nonwoven fabric of claim 186, wherein one or more of the first yarns are spun polyester yarns.

192. (Rejected) The nonwoven fabric of claim 186, wherein one or more of the second yarns are single strand cotton yarns.

193. (Rejected) The nonwoven fabric of claim 169, wherein the second yarns have been formed in a weft-direction and a side of the second yarns are supported by, and adhered to, the one side of the first yarns by the adhesive, applied to only the one side of the first yarns.

194. (Rejected) The nonwoven fabric of claim 193 which has a weft-direction strength equal to its warp-direction strength.

195. (Rejected) The nonwoven fabric of claim 193, wherein the denier of all the first and second yarns is approximately the same.

196. (Rejected) The nonwoven fabric of claim 193, wherein the denier of some of the first yarns is different and/or the denier of some of the second yarns is different.

197. (Rejected) The nonwoven fabric of claim 193, wherein the denier of all the first yarns is the same and the denier of all the second yarns is the same.

198. (Rejected) The nonwoven fabric of claim 193, wherein the denier of the first yarns is different from the denier of the second yarns.

199. (Rejected) The nonwoven fabric of claim 193, wherein some of the second yarns are of a smaller denier than the first yarns.

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**(iv) Status of amendments:**

Appellant filed no response to the Final Rejection.

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**(v) Summary of claimed subject matter:**

Claims 158-199 are on appeal herein. All of the claims on appeal depend either directly or indirectly from Claim 158, reproduced here:

158. A nonwoven fabric comprising:

a first layer of substantially parallel first yarns; and

a second layer of substantially parallel second yarns;

the first and second yarns being substantially perpendicular to one another and the first and second layers being adhered together with an adhesive, wherein:

(a) the adhesive is applied to one side of the first layer of substantially parallel yarns in a discontinuous manner;

(b) the adhesive forms random bridges between substantially parallel yarns of the first layer; and

(c) the adhesive is located substantially only between the first and second layers of the adhered together substantially perpendicular yarns.

Claim 158 clearly recites several distinctive features of the claimed nonwoven fabric, namely:

(1) parallel first yarns (e.g., warp yarns);

(2) parallel second yarns (e.g., weft yarns);

(3) wherein the first and second yarns are substantially perpendicular and bound by adhesive; and wherein:

(4) the adhesive is applied to one side of the first yarns in a discontinuous manner;

(5) the adhesive forms random bridges between the parallel first yarns; and

(6) the adhesive is located substantially only between the layers of the first and second yarns.

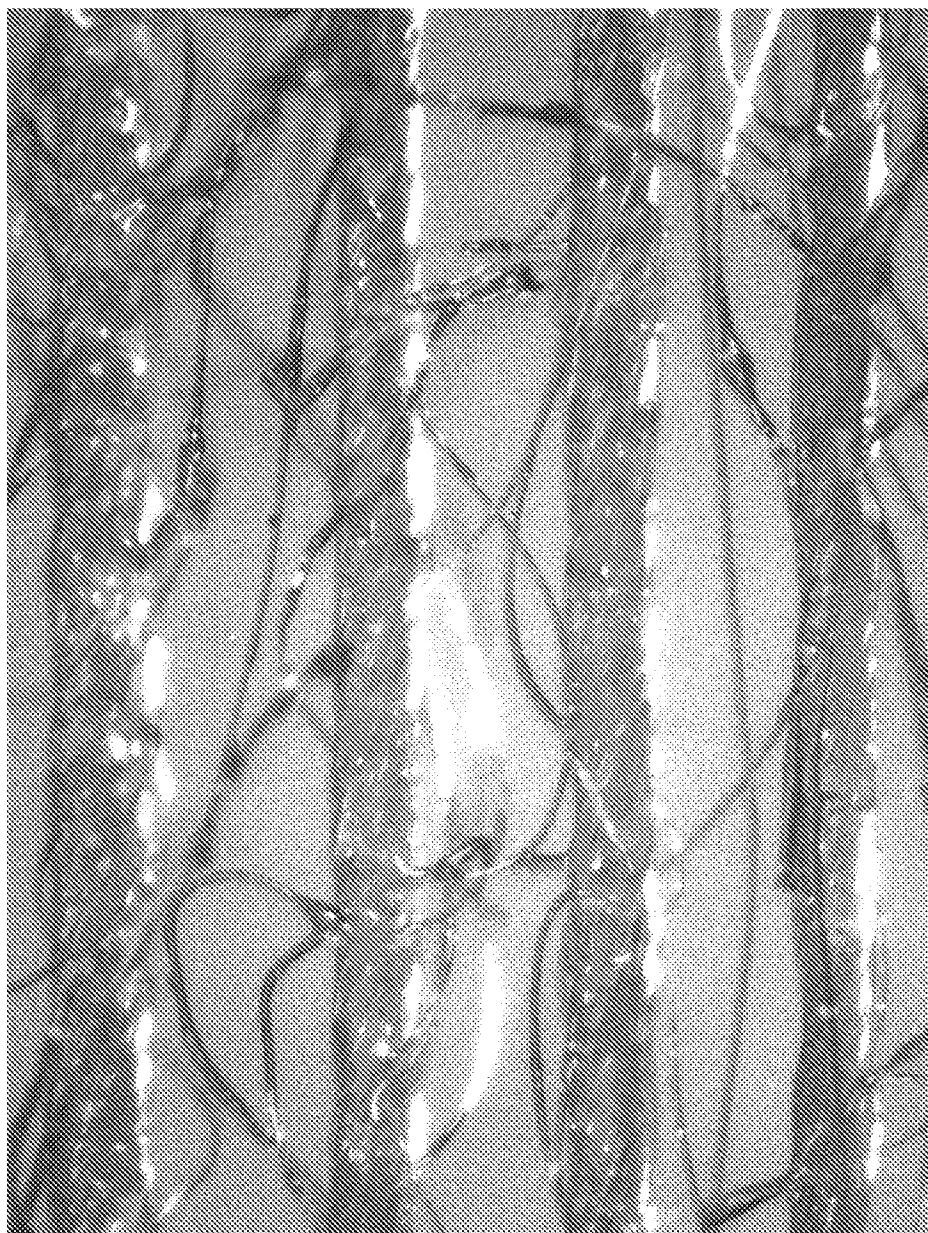
These features are best illustrated in Figures 61A and 61B of the application, a portion of each shown below.

In Figure 61A we see the side of the fibers which includes the discontinuous adhesive and shows the adhesive bridges between the substantially parallel yarns. A color version of this Figure is provided in the Evidence Appendix. There the adhesive appears as a golden colored material on the parallel fibers.

In Figure 61B we see the opposite side of the fibers – showing essentially no adhesive coating, but the random adhesive bridges on the opposite side are visible between the substantially parallel yarns. A color version of this Figure is also provided in the Evidence Appendix. There we see that some of the golden colored adhesive has come around the fibers and we also see the random bridges of adhesive between parallel fibers.

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From Fig. 61A:



From Fig. 61B:





Support for these claim limitations comes from the specification as filed, e.g., at paragraph no. [0129]:

[0129] One preferred nonwoven fabric of the present invention has parallel yarns held in a substantially parallel and nontwisting relationship in the form of a nonwoven, fabric-like sheet. Such materials are referred to herein as warp yarn substrates, and two manufacturing units for the formation of such substrates have been developed. In each case, adhesive is applied to one side of the parallel yarns. The adhesive is advantageously applied in a random pattern, forming bridges of adhesive between parallel yarns. These adhesive bridges provide the backbone of the warp yarn substrate, giving it fabric-like flexibility and feel. The bridges also hold the parallel positioning of the fibers and prevent twisting of individual fibers.

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**(vi) Grounds of rejection to be reviewed on appeal:**

Five rejections have been maintained by the Examiner:

**Rejection No. 1:**

Claims 158-161, 164-166, 169, 170, 172-176, 178, 179, 186-188, and 192-199 have been rejected under 35 U.S.C. §102(b) as being anticipated by Sabee (U.S. 4,910,064).

**Rejection No. 2:**

Claims 158-167, 169-189, and 192-199 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hartstein (U.S. 3,591,434) in view of Jarrell et al. (U.S. 5,294,258).

**Rejection No. 3:**

Claims 162, 163, 167, 168, 177, 180-185, and 189-191 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Sabee (U.S. 4,910,064).

**Rejection No. 4:**

Claims 168, 190 and 191 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hartstein (U.S. 3,591,434) and Jarrell et al. (U.S. 5,294,258) as applied to claims 164 and 186 above, and in further view of Pittman (U.S. 3,753,842).

**Rejection No. 5:**

Claims 168, 190, and 191 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Sabee (U.S. 4,910,064) as applied to claims 164 and 186 above, and in further view of Pittman (U.S. 3,753,842).

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**(vii) Argument:**

**Rejection No. 1:**

**Section 102(b) rejection over U.S. 4,910,064:**

Claims 158-161, 164-166, 169, 170, 172-176, 178, 179, 186-188, and 192-199 have been rejected under 35 U.S.C. §102(b) as being anticipated by Sabee (U.S. 4,910,064).

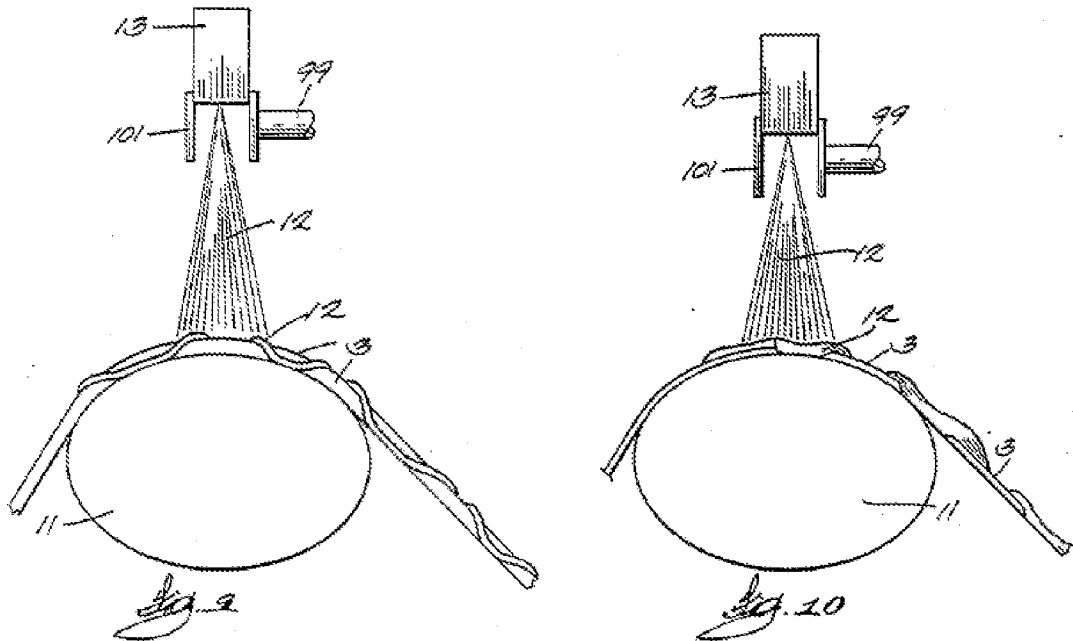
The following comments apply to each of the rejected claims, which are further argued individually below. Appellant respectfully submits that these claims are NOT to be considered as a group herein, and that each claim is patentable individually for the reasons set forth here and as set forth below. Accordingly, the following comments relate to each of the rejected claims, but are provided here once for the Board's consideration. Appellant further argues each claim separately, below. Accordingly, each claim must be considered on its own merits.

**General arguments against the Section 102(b) rejection of each of the claims:**

Anticipation requires identity of invention. Sabee does not anticipate any of the rejected claims because Sabee neither teaches nor suggests the claimed invention which requires that the adhesive be located **substantially only BETWEEN the first and second layers of the adhered together substantially perpendicular yarns**. This limitation carries through to the claims that depend either directly or indirectly with Claim 158.

Sabee actually teaches only applying adhesive -- i.e., molten melt blown fibers -- to both sides of his first layer of substantially parallel yarns.

This is clearly seen from Sabee's Figures 9 and 10.



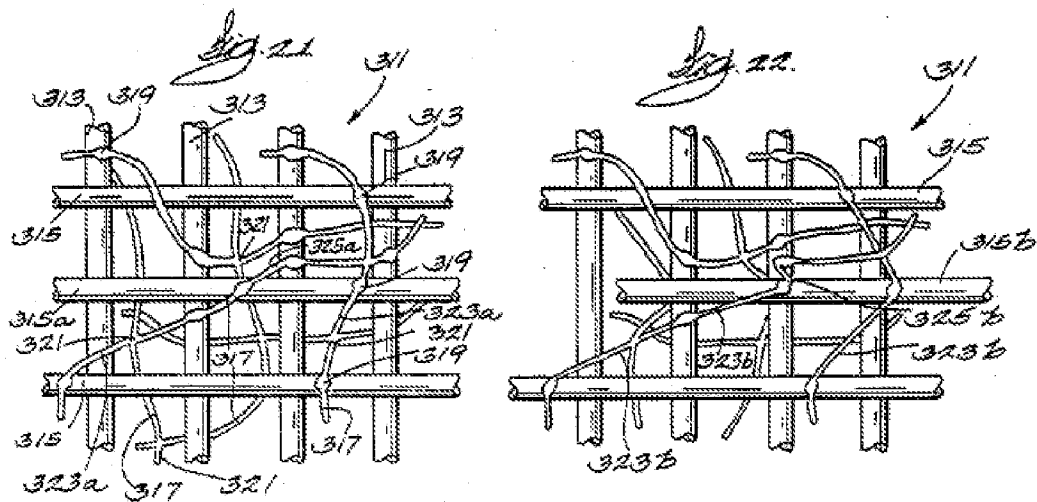
Sabee does not disclose applying adhesive to only one side of a first layer of substantially parallel yarns, so that the adhesive is located only between the first layer and a second layer of yarns, adhered to the first.

It is irrelevant that Sabee describes:

“continuous filaments of a synthetic polymer .. onto at least one side of which molten melt blown fibers ... are deposited and self-bonded to stabilize or fix the continuous filaments.”

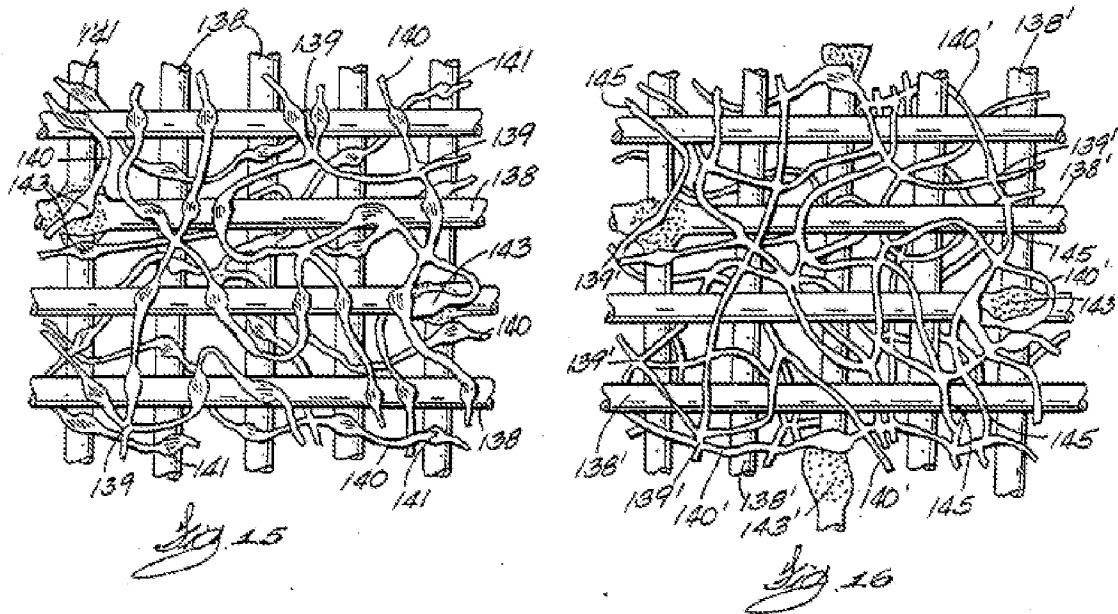
Figures 9 and 10 of Sabee show that even when Sabee's molten melt blown fibers are deposited only on one side his filaments, the melt blown fibers coat almost the entire circumference of the filaments.

Furthermore, Figures 21 and 22 of Sabee clearly show that, even if Sabee's molten melt blown fibers are claimed to be deposited only on one side of his nonwoven fabrics, the filaments of his fabrics (as described in columns 21-22) have their melt blown fibers on **both sides** of the filaments of both their first and second layers.



By comparison, it is very important in our nonwoven fabric to insure that our adhesive is not applied to our first layer of warp yarns in a manner which would push the adhesive "through" the first layer. The simple reason is that adhesive that is pushed "through" harms the appearance of the fabric and its hand. A first layer of warp yarns having adhesive pushed "through" it looks shiny and feels rough.

See also, Figures 15 and 16 from Sabee – showing melt blown fibers everywhere:



FIGS. 15 and 16 are magnified views of typical areas of bonded fibers and filaments formed into webs according to Sabee's teachings. As shown therein, melt blown fibers (140), which act as an adhesive, **go everywhere**, front, back, and between the layers of yarns. These figures cannot be ignored, as they teach what Sabee creates.

In a later issued patent (US 5,200,246) Sabee describes his '064 patent as follows:

... low cost disposable fabrics, including elasticized fabrics of superior formation, strength and toughness are produced by the use of a stabilized continuous filamentary web, the manufacture of which is fully described in Sabee, U.S. Pat. No. 4,910,064, the disclosure of which is incorporated herein by reference and relied upon. It is this use of stabilized continuous filaments in combination with melt blown gas-fiber streams which, **upon simultaneous deposition onto both sides of the stabilized continuous filaments, intermingle with each other and**

**lock the continuous filaments in place by the joining of the two intermingled melt blown webs.** These joinings or junctions range from mechanical entanglement to fusion bonding of the fibers. This intermingled joining of the melt blown fibers whether it be mechanical intermingling only or fusion bonding ranging from stick bonds to full fusion bonds, is not a bond of the continuous filaments at their intersections. Hence the continuous filament intersections remain free to slip and slide over one another. This ability of the continuous filaments to slip and slide over one another during use drastically reduces the stiffness of the fabric and enhances the drape and hand. The improved drape and hand provided by this fabric, combined with the intermingling of the two opposing melt blown fibrous web surface fibers, form an integrated matrix of fibrous filaments and predetermined non-random laydown orientation of continuous filaments having a high cohesion and web integrity in a single step.

**Specific Individual Claim Arguments:**

**Claim 158:**

As set forth above, Sabee fails to teach all of the elements recited in this independent claim. In Sabee, the melt blown fibers go everywhere, and they are not limited to being “substantially only between the first and second layers of the adheredd together substantially parallel yarns” as required by paragraph (c) of this claim. Given that the cited art fails to teach every element recited in this Independent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 159:**



This dependent claim adds the further detail to Claim 158, namely that the adhesive is **on only one side** of the first yarns. In contrast, Sabee shows melt blown fibers everywhere. Thus, Sabee fails to teach all of the elements recited. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 160:**

This dependent claim adds the further detail to Claim 159, namely that the substantially parallel first yarns in the first layer are held together to form a sheet by the bridges of the adhesive **on one side**, prevent twisting of the individual first yarns in the first layer. In contrast, Sabee shows melt blown fibers everywhere. Thus, Sabee fails to teach all of the elements recited. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 161:**

This dependent claim adds the further detail to Claim 159, namely that the adhesive **on one side** of the first yarns is present at a level of from about 5 weight percent to about 25 weight percent, based upon the total weight of the sheet of the first yarns. In contrast, Sabee shows melt blown fibers everywhere. Thus, Sabee fails to teach all of the elements recited. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 164:**

This multiple dependent claim adds the further detail to Claims 158-163, namely that the first yarns are selected from the group consisting of polymer fibers, natural fibers, synthetic fibers, composite fibers, carbon fibers, glass fibers, metallic fibers and graphite. These claims all include the **one side** limitation of the adhesive, which is not taught or enabled by Sabee. Instead, Sabee shows melt blown fibers everywhere. Thus, Sabee fails to teach all of the elements recited. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 165:**

This dependent claim adds the further detail to Claim 164, namely that the polymer fibers are selected from the group consisting of polyester, polyethylene, rayon, polypropylene and nylon fibers. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 166:**

This dependent claim adds the further detail to Claim 164, namely that the natural fibers are selected from the group consisting of cotton fibers and wool fibers. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 169:**

This multiple dependent claim adds the further detail to Claims 158-163, namely that the substantially parallel first yarns have been formed in a warp-direction and are supported and bonded on only **one side** by the adhesive. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 170:**

This dependent claim adds the further detail to Claim 169, namely, that the adhesive has been applied to **one side** of the first yarns by dip/nip saturation, spraying, gravure coating, or kiss coating. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 172:**

This dependent claim adds the further detail to Claim 170, namely that the adhesive on **one side** of the yarns is a heat activatable adhesive. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 173:**

This dependent claim adds the further detail to Claim 172, namely that the adhesive on **one side** of the yarns is a hot melt adhesive. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 174:**

This dependent claim adds the further detail to Claim 173, namely that the adhesive on **one side** of the yarns is a hot melt copolyester polymer. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 175:**

This dependent claim adds the further detail to Claim 170, namely that the adhesive on **one side** of the yarns is a scrim or lace web of adhesive or a meltblown adhesive. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 176:**

This multiple dependent claim adds the further detail to Claim 1158-163, namely that the adhesive on **one side** of the yarns, is from about 5 to 20 percent by weight of the total weight of the fabric. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 178:**

This multiple dependent claim adds the further detail to Claim 158-163, namely that the second yarns extend at an angle of about 80 degrees to about 89.7 degrees relative to the first yarns. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 179:**

This dependent claim adds the further detail to Claim 178, namely that the second yarns extend at an angle of about 85 to about 89.7 degrees relative to the first yarns. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 186:**

This dependent claim adds the further detail to Claim 164, namely that the second yarns are selected from the group consisting of polymer fibers, natural fibers, synthetic fibers, composite fibers, carbon fibers, glass fibers, metallic fibers and graphite. Claim 164 depends from Claims 158-163 and includes all of the limitations thereof, particularly the **one side** limitation of the adhesive. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 187:**

This dependent claim adds the further detail to Claim 186, namely that the polymer fibers are selected from the group consisting of polyester, polyethylene, rayon, polypropylene and nylon fibers. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 188:**

This dependent claim adds the further detail to Claim 186, namely that the natural fibers are selected from the group consisting of cotton fibers and wool fibers. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 192:**

This dependent claim adds the further detail to Claim 186, namely that one or more of the second yarns are single strand cotton yarns. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 193:**

This dependent claim adds the further detail to Claim 169, namely that the second yarns have been formed in a weft-direction and a side of the second yarns are supported by, and adhered to, the one side of the first yarns by the adhesive, applied to only the **one side** of the first yarns. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers

everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 194:**

This dependent claim adds the further detail to Claim 193, namely that the fabric has a weft-direction strength equal to its warp-direction strength. Claim 193 depends from Claim 169. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 195:**

This dependent claim adds the further detail to Claim 193, namely that the denier of all the first and second yarns is approximately the same. Claim 193 depends from Claim 169. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.



**Claim 196:**

This dependent claim adds the further detail to Claim 193, namely that the denier of some of the first yarns is different and/or the denier of some of the second yarns is different. Claim 193 depends from Claim 169. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 197:**

This dependent claim adds the further detail to Claim 193, namely that the denier of all the first yarns is the same and the denier of all the second yarns is the same. Claim 193 depends from Claim 169. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 198:**

This dependent claim adds the further detail to Claim 193, namely that the denier of the first yarns is different from the denier of the second yarns. Claim 193 depends from Claim 169. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

**Claim 199:**

This dependent claim adds the further detail to Claim 193, namely that some of the second yarns are of a smaller denier than the first yarns. Claim 193 depends from Claim 169. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, Sabee fails to teach all of the elements recited, particularly the **one side** limitation of the adhesive. Instead, Sabee shows melt blown fibers everywhere. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested. Given that the cited art fails to teach every element recited in this dependent claim, the Section 102 rejection must be reversed. Such action is respectfully requested.

For the foregoing reasons, Appellant respectfully submits that reversal of the Section 102(b) rejection of Claims 158 -161, 164-166, 169, 170, 172-176, 178, 179, 186-188 and 192-199 is proper. Such action is respectfully requested.

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**Rejection No. 2:**

**Section 103(a) rejection over U.S. 3,591,434 in view of U.S. 5,294,258:**

Claims 158-167, 169-189, and 192-199 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hartstein (U.S. 3,591,434) in view of Jarrell et al. (U.S. 5,294,258).

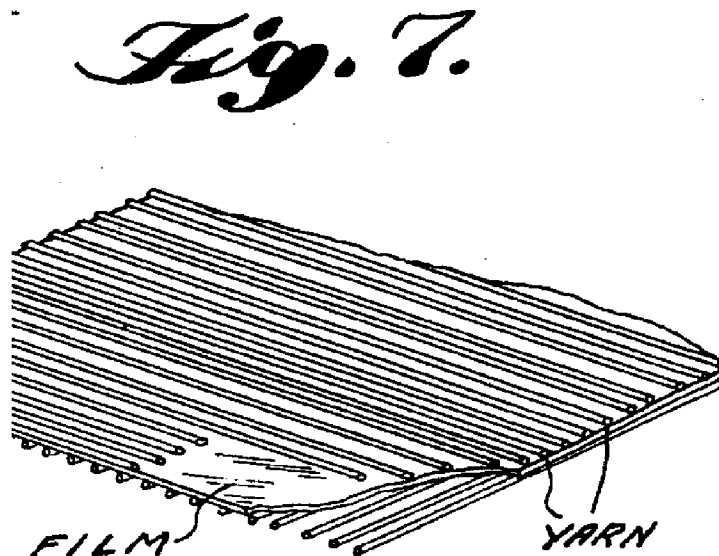
The following comments apply to each of the rejected claims, which are further argued individually below. Appellant respectfully submits that these claims are NOT to be considered as a group herein, and that each claim is patentable individually for the reasons set forth here and as set forth below. Accordingly, the following comments relate to each of the rejected claims, but are provided here once for the Board's consideration. Appellant further argues each claim separately, below. Accordingly, each claim must be considered on its own merits.

**General arguments against the Section 103(a) rejection of each of the claims**

The proposed combination of Hartstein and Jarrell does not make any of the rejected claims obvious, for the following reasons:

Claim 158 makes it clear that the bridges claimed herein are located between parallel yarns of the first layer – not between yarns of the first and second layers. Moreover, Claim 158 requires that the adhesive layer not be uniform – it is both “discontinuous” (i.e., it is “non-uniform”) and it forms random bridges between substantially parallel yarns of the first layer.

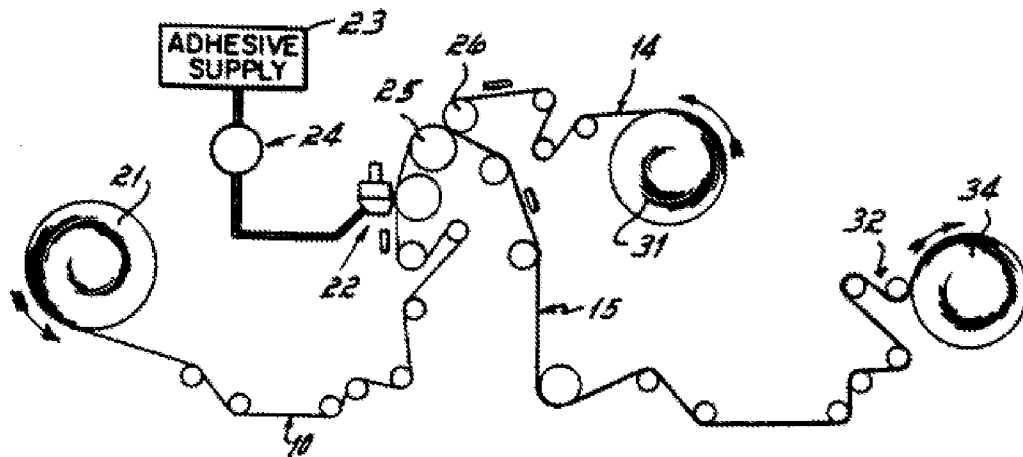
Hartstein clearly teaches a set of parallel yarns that are bonded to one side of a uniform, self-supporting, discrete thermoplastic film, thereby forming a uni-axial laminate. A second set of parallel yarns are cross-laid to the uniaxial laminate on the other side of the uniform thermoplastic film, forming a sandwich – a bi-axial laminated non-woven fabric. This is best illustrated in Figure 7, shown below:



Nothing in Hartstein teaches or suggests the random bridges recited in paragraph (b) of Claim 158, which are randomly formed to connect parallel yarns of the first layer. Instead, Hartstein discloses only two crossed layers of parallel yarns, bonded to opposite sides of a continuous thermoplastic film; thus Hartstein does not teach or suggest the invention defined by the rejected claims.

Jarrell teaches only laminates of two woven or non-woven fabric webs that are bonded together by an adhesive layer between them; thus, Jarrell does not teach or suggest provide either a layer of substantially parallel first yarns as required in Claim

158, nor does Jarrell teach or suggest either part (a) or part (b) of Claim 158 regarding the adhesive applied to the parallel yarns. FIG. 5 of Jarrell illustrates one system for manufacture of a breathable fabric 15.

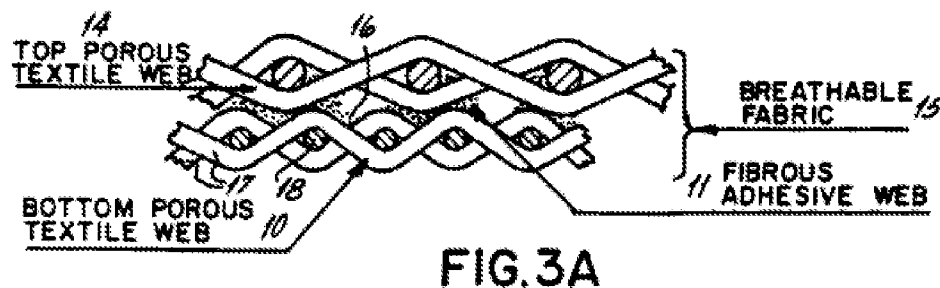


**FIG.5**

A porous, textile web 10 is unwound from a web roll 21 and is directed through a series of rollers to a coating head 22, where a porous adhesive coating such as adhesive matrix 11, is applied to one side of the web 10. Coating head 22 is operably connected to receive hot melt adhesive from an adhesive supply 23 via a motor and pump means in a metering station 24. Thereafter, the web 10 is wound about a laminating roll 25. A web 14 is unwound from a web roll 31 and wound about a series of rollers to a second laminating roll 26, where the two webs 10, 14 are joined together with the adhesive

matrix which has been applied to web 10 situated between the two webs. Thereafter, the joined webs travel in the form of the laminated fabric 15 through a series of rollers to a lay-on roller station 32. Thereafter, the breathable, laminated fabric 15 is wound up on a roll 34, for example, from which it can be converted to the desired application or product.

The porous webs 10 and 14 shown above do not include either a “first layer of substantially parallel first yarns” as required by Claim 158. Instead, as illustrated in Figure 3A, these webs have both warp direction and weft direction yarns – and adhesive is used to bond two of these webs together.



Clearly the teaching of Jarrell fails to make up the deficiencies of the primary reference. Jarrell merely discloses a process of making a “breathable” laminate by bonding two webs of woven or non-woven fabric with adhesive between them.

Appellant submits that the proposed combination of the teachings of Hartstein and Jarrell is simply not logical. Hartstein uses a uniform material - a self-supporting, discrete thermoplastic film – as the adhesive for his composite sandwich of yarn substrates. In contrast thereto, Jarrell teaches the use of adhesive between webs of fabric applied in a web pattern for uniformly coating the contact area of the web. See Col. 3, lines 50-56.

Where is the motivation to combine these teachings? Why would the skilled artisan combine these two references? Hartstein makes one type of product and Jarrell makes another type of product. The teachings are simply not combinable as suggested. At best, it might be “obvious to try” – to the person having ordinary skill in this art – to employ the adhesive teachings of Jarrell in the Hartstein process – but there is no guarantee of success – given the vast differences between the processing conditions each patent uses in making very different products. Given this, the proposed Section 103(a) rejection simply does not set forth a proper prima facie case of obviousness, and the rejection should be reversed by the Board. Such action is respectfully requested.

**Specific Individual Claim Arguments:**

**Claim 158:**

This independent claim is neither taught nor suggested by the proposed combination of art. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 159:**

This dependent claim adds the further detail to Claim 158, namely that the random adhesive is on **only one side** of the first yarns. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the claim elements. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 160:**

This dependent claim adds the further detail to Claim 159, namely that the substantially parallel first yarns in the first layer are held together to form a sheet by the random bridges of the adhesive which prevent twisting of the individual first yarns in the first layer. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 161:**

This dependent claim adds the further detail to Claim 159, namely that the discontinuous adhesive is on the one side of the first yarns at a level of from about 5 weight percent to about 25 weight percent, based upon the total weight of the sheet of the first yarns. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 162:**

This dependent claim adds the further detail to Claim 161, namely that the total weight of the sheet of the first yarns is about  $50 \text{ g/m}^2$  and the discontinuous adhesive weight is about 2 to  $15 \text{ g/m}^2$ . Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random



bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 163:**

This dependent claim adds the further detail to Claim 161, namely that the total weight of the sheet of the first yarns is about  $50 \text{ g/m}^2$  and the discontinuous adhesive weight is about 5 to  $10 \text{ g/m}^2$ . Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 164:**

This dependent claim adds the further detail to Claims 158-163, namely that the first yarns are selected from the group consisting of polymer fibers, natural fibers, synthetic fibers, composite fibers, carbon fibers, glass fibers, metallic fibers and graphite. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 165:**

This dependent claim adds the further detail to Claim 164, namely that the polymer fibers are selected from the group consisting of polyester, polyethylene, rayon, polypropylene and nylon fibers. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 166:**

This dependent claim adds the further detail to Claim 164, namely that the natural fibers are selected from the group consisting of cotton fibers and wool fibers. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 167:**

This dependent claim adds the further detail to Claim 164, namely that the metal fibers are selected from the group consisting of copper, gold, aluminum, silver and platinum. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 169:**

This dependent claim adds the further detail to Claims 158-163, namely that the substantially parallel first yarns have been formed in a warp-direction and supported and bonded on only one side by the adhesive. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 170:**

This dependent claim adds the further detail to Claim 169, namely that the adhesive has been applied to the first yarns by dip/nip saturation, spraying, gravure coating, or kiss coating. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 171:**

This dependent claim adds the further detail to Claim 170, namely that the adhesive has a thickness of about 0.25 mil to about 1 mil. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or

suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 172:**

This dependent claim adds the further detail to Claim 170, namely that the adhesive is a heat activatable adhesive. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 173:**

This dependent claim adds the further detail to Claim 172, namely that the adhesive is a hot melt adhesive. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 174:**

This dependent claim adds the further detail to Claim 173, namely that the adhesive is a hot melt copolyester polymer. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either

reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 175:**

This dependent claim adds the further detail to Claim 170, namely that the adhesive is a scrim or lace web of adhesive or a meltblown adhesive. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 176:**

This multiple dependent claim adds the further detail to Claim 158-163, namely that the adhesive is from about 5 to 20 percent by weight of the total weight of the fabric. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 177:**

This dependent claim adds the further detail to Claim 176, namely that the adhesive is from about 10 to 15 percent by weight of the total weight of the fabric. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between

parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 178:**

This multiple dependent claim adds the further detail to Claims 158-163, namely that the second yarns extend at an angle of about 80 degrees to about 89.7 degrees relative to the first yarns. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 179:**

This dependent claim adds the further detail to Claim 178, namely that the second yarns extend at an angle of about 85 to about 89.7 degrees relative to the first yarns. Claim 178 depends from Claim 169. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 180:**

This multiple dependent claim adds the further detail to Claims 158-163, namely that the first yarns are equally spaced apart and the second yarns are equally spaced apart. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 181:**

This multiple dependent claim adds the further detail to Claims 158-163, namely that the first layer and/or the second layer has a density of at least 40 yarns per inch in a transverse direction of the yarns. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 182:**

This dependent claim adds the further detail to Claim 181, namely that the first layer and/or the second layer has a density of between 40 and 140 yarns per inch in a transverse direction of the yarns. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 183:**

This dependent claim adds the further detail to Claim 182, namely that the first layer and/or the second layer has a density of between 60 and 100 yarns per inch in a transverse direction of the yarns. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 184:**

This dependent claim adds the further detail to Claim 183, namely that the first layer has a density of 40 to 90 yarns per inch of 30/1 to 36/1 count yarn. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 185:**

This dependent claim adds the further detail to Claim 183, namely that the second layer has a density of 90 to 140 yarns per inch of 36/1 count yarn. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.



**Claim 186:**

This dependent claim adds the further detail to Claim 164, namely that the second yarns are selected from the group consisting of polymer fibers, natural fibers, synthetic fibers, composite fibers, carbon fibers, glass fibers, metallic fibers and graphite. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 187:**

This dependent claim adds the further detail to Claim 186, namely that the polymer fibers are selected from the group consisting of polyester, polyethylene, rayon, polypropylene and nylon fibers. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 188:**

This dependent claim adds the further detail to Claim 186, namely that the natural fibers are selected from the group consisting of cotton fibers and wool fibers. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof.

Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 189:**

This dependent claim adds the further detail to Claim 186, namely that the metal fibers are independently selected from the group consisting of copper, gold, aluminum, silver and platinum. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 192:**

This dependent claim adds the further detail to Claim 186, namely that one or more of the second yarns are single strand cotton yarns. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 193:**

This dependent claim adds the further detail to Claim 169, namely that the second yarns have been formed in a weft-direction and a side of the second yarns are supported by, and adhered to, the one side of the first yarns by the adhesive, applied to only the one side of the first yarns. Claim 169 depends from Claims 158-163 and includes all of the

limitations thereof. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 194:**

This dependent claim adds the further detail to Claim 193, namely that the fabric has weft-direction strength equal to its warp-direction strength. Claim 193 depends from Claim 169. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 195:**

This dependent claim adds the further detail to Claim 193, namely that the denier of all the first and second yarns is approximately the same. Claim 193 depends from Claim 169. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 196:**

This dependent claim adds the further detail to Claim 193, namely that the denier of some of the first yarns is different and/or the denier of some of the second yarns is different. Claim 193 depends from Claim 169. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 197:**

This dependent claim adds the further detail to Claim 193, namely that the denier of all the first yarns is the same and the denier of all the second yarns is the same. Claim 193 depends from Claim 169. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 198:**

This dependent claim adds the further detail to Claim 193, namely that the denier of the first yarns is different from the denier of the second yarns. Claim 193 depends from Claim 169. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, the cited art, when considered either alone or in combination,

fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 199:**

This dependent claim adds the further detail to Claim 193, namely that some of the second yarns are of a smaller denier than the first yarns. Claim 193 depends from Claim 169. Claim 169 depends from Claims 158-163 and includes all of the limitations thereof. Again, the cited art, when considered either alone or in combination, fails to teach or suggest all of the elements recited. There are no random bridges of adhesive between parallel first yarns taught or suggested by either reference, or the combined teachings thereof. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

For the foregoing reasons, Appellant respectfully submits that reversal of the Section 103(a) rejection of Claims 158-167, 169-189, and 192-199 is proper. Such action is respectfully requested.

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**Rejection No. 3:**

**Section 103(a) rejection over U.S. 4,910,064:**

Claims 162, 163, 167, 168, 177, 180-185, and 189-191 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Sabee (U.S. 4,910,064).

The following comments apply to each of the rejected claims, which are further argued individually below. Appellant respectfully submits that these claims are NOT to be considered as a group herein, and that each claim is patentable individually for the reasons set forth here and as set forth below. Accordingly, the following comments relate to each of the rejected claims, but are provided here once for the Board's consideration. Appellant further argues each claim separately, below. Accordingly, each claim must be considered on its own merits.

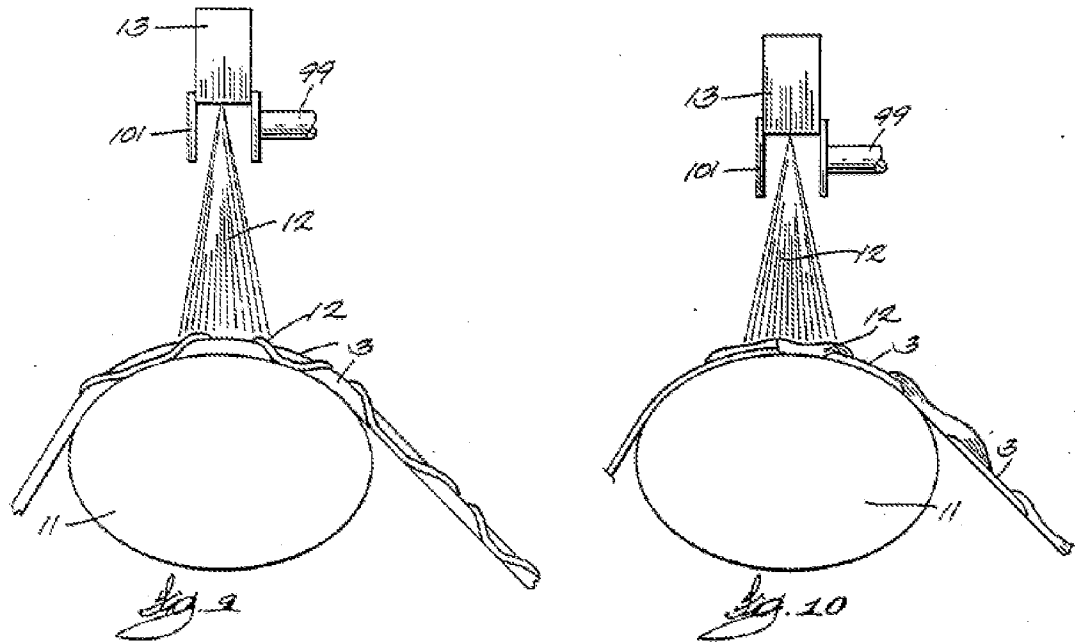
**General arguments against the Section 103(a) rejection of each of the claims:**

Sabee does not make any of the rejected claims obvious, for the following reasons:

Sabee neither teaches nor suggests the claimed invention which requires that the adhesive be located **substantially only BETWEEN the first and second layers of the adhered together substantially perpendicular yarns**. This limitation carries through to the claims that depend either directly or indirectly with Claim 158.

Sabee actually teaches only applying adhesive -- i.e., molten melt blown fibers -- to both sides of his first layer of substantially parallel yarns.

This is clearly seen from Sabee's Figures 9 and 10.

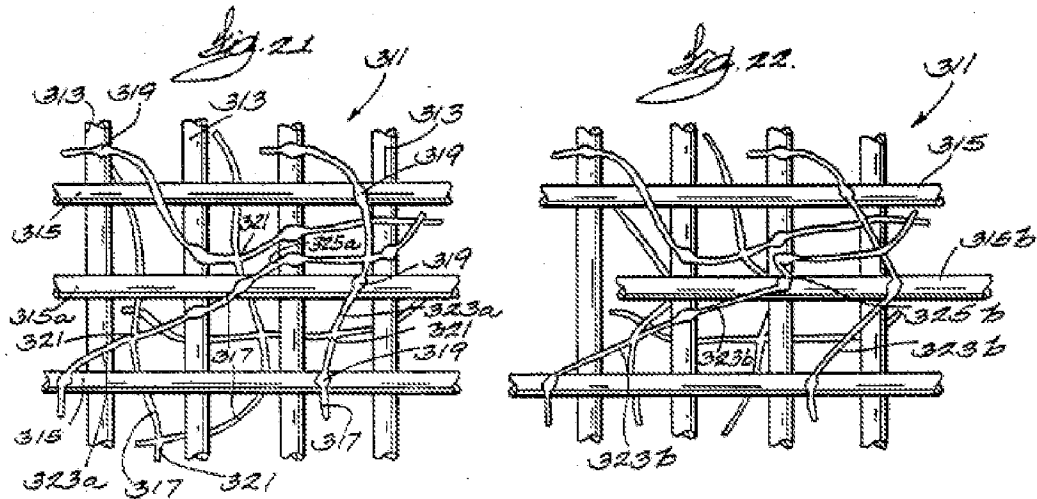


Sabee does not disclose applying adhesive to only one side of a first layer of substantially parallel yarns, so that the adhesive is located only between the first layer and a second layer of yarns, adhered to the first. It is irrelevant that Sabee describes:

“continuous filaments of a synthetic polymer .. onto at least one side of which molten melt blown fibers ... are deposited and self-bonded to stabilize or fix the continuous filaments.”

Figures 9 and 10 of Sabee show that even when Sabee's molten melt blown fibers are deposited only on one side his filaments, the melt blown fibers coat almost the entire circumference of the filaments.

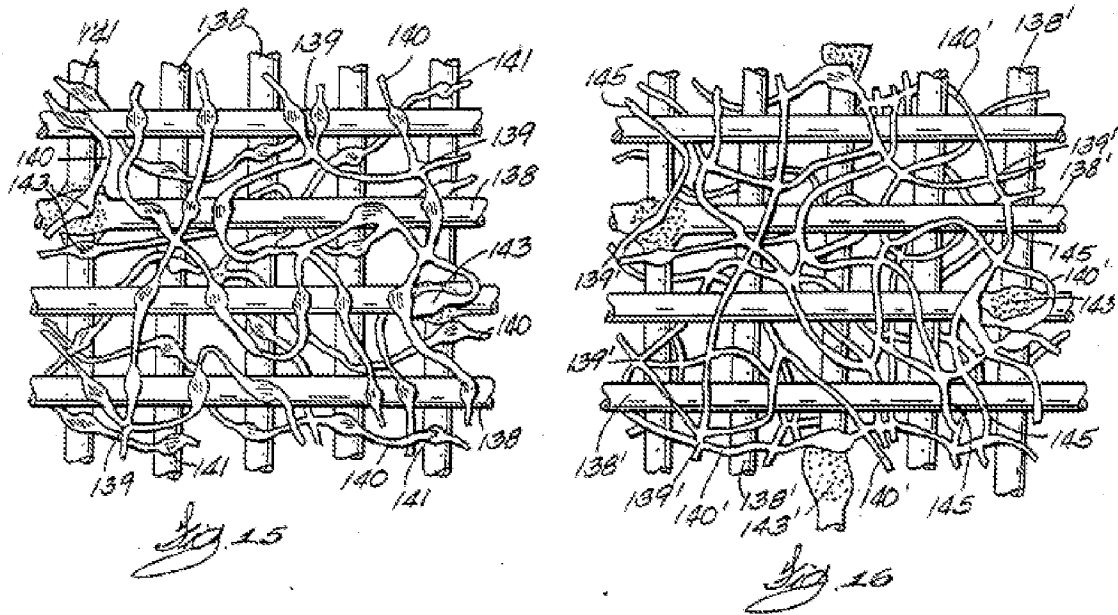
Furthermore, Figures 21 and 22 of Sabee clearly show that, even if Sabee's molten melt blown fibers are claimed to be deposited only on one side of his nonwoven fabrics, the filaments of his fabrics (as described in columns 21-22) have their melt blown fibers on **both sides** of the filaments of both their first and second layers.



By comparison, it is very important in our nonwoven fabric to insure that our adhesive is not applied to our first layer of warp yarns in a manner which would push the adhesive "through" the first layer. The simple reason is that adhesive that is pushed "through" harms the appearance of the fabric and its hand. A first layer of warp yarns having adhesive pushed "through" it looks shiny and feels rough.

See also, Figures 15 and 16 from Sabee – showing melt blown fibers everywhere:





FIGS. 15 and 16 are magnified views of typical areas of bonded fibers and filaments formed into webs according to Sabee's teachings. As shown therein, melt blown fibers (140), which act as an adhesive, **go everywhere**, front, back, and between the layers of yarns. These figures cannot be ignored, as they teach what Sabee creates.

In a later issued patent (US 5,200,246) Sabee describes his '064 patent as follows:

... low cost disposable fabrics, including elasticized fabrics of superior formation, strength and toughness are produced by the use of a stabilized continuous filamentary web, the manufacture of which is fully described in Sabee, U.S. Pat. No. 4,910,064, the disclosure of which is incorporated herein by reference and relied upon. It is this use of stabilized continuous filaments in combination with melt blown gas-fiber streams which, **upon simultaneous deposition onto both sides of the stabilized continuous filaments, intermingle with each other and lock the continuous filaments in place by the joining of the two intermingled**

**melt blown webs.** These joinings or junctions range from mechanical entanglement to fusion bonding of the fibers. This intermingled joining of the melt blown fibers whether it be mechanical intermingling only or fusion bonding ranging from stick bonds to full fusion bonds, is not a bond of the continuous filaments at their intersections. Hence the continuous filament intersections remain free to slip and slide over one another. This ability of the continuous filaments to slip and slide over one another during use drastically reduces the stiffness of the fabric and enhances the drape and hand. The improved drape and hand provided by this fabric, combined with the intermingling of the two opposing melt blown fibrous web surface fibers, form an integrated matrix of fibrous filaments and predetermined non-random laydown orientation of continuous filaments having a high cohesion and web integrity in a single step.

**Specific Individual Claim Arguments:**

**Claim 162:**

This dependent claim adds the further detail to Claim 161, namely that the total weight of the sheet of the first yarns is about  $50 \text{ g/m}^2$  and the adhesive weight is about 2 to  $15 \text{ g/m}^2$ . Claim 161 depends from and includes all of the limitations of dependent Claim 159. Claim 159 depends from Claim 158 and includes all of the limitations recited therein. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 163:**

This dependent claim adds the further detail to Claim 161, namely that the total weight of the sheet of the first yarns is about  $50 \text{ g/m}^2$  and the adhesive weight is about 5 to  $10 \text{ g/m}^2$ . Claim 161 depends from and includes all of the limitations of dependent Claim 159. Claim 159 depends from Claim 158 and includes all of the limitations recited therein. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 167:**

This dependent claim adds the further detail to Claim 164, namely that the metal fibers are selected from the group consisting of copper, gold, aluminum, silver and platinum. Multiple dependent Claim 164 depends from and includes all of the limitations of Claims 158-163. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 168:**

This dependent claim adds the further detail to Claim 164, namely that one or more of the first yarns are glass fibers. Multiple dependent Claim 164 depends from and includes all of the limitations of Claims 158-163. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 177:**

This dependent claim adds the further detail to Claim 176, namely that the adhesive is from about 10 to 15 percent by weight of the total weight of the fabric. Claim 176 is a multiple dependent claim which includes all of the limitations of Claim 158-163. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 180:**

This multiple dependent claim adds the further detail to Claims 158-163, namely that the first yarns are equally spaced apart and the second yarns are equally spaced apart. This claim depends from and includes all of the limitations of Claims 158-163. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 181:**

This multiple dependent claim adds the further detail to Claims 158-163, namely that the first layer and/or the second layer has a density of at least 40 yarns per inch in a transverse direction of the yarns. This claim depends from and includes all of the limitations of Claims 158-163. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 182:**

This dependent claim adds the further detail to Claim 181, namely that the first layer and/or the second layer has a density of between 40 and 140 yarns per inch in a transverse direction of the yarns. This claim depends indirectly from multiple dependent Claim 181. Thus, this claim also depends from and includes all of the limitations of Claims 158-163. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 183:**

This dependent claim adds the further detail to Claim 182, namely that the first layer and/or the second layer has a density of between 60 and 100 yarns per inch in a transverse direction of the yarns. This claim depends indirectly from multiple dependent Claim 181. Thus, this claim also depends from and includes all of the limitations of Claims 158-163. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 184:**

This dependent claim adds the further detail to Claim 183, namely that the first layer has a density of 40 to 90 yarns per inch of 30/1 to 36/1 count yarn. This claim depends indirectly from multiple dependent Claim 181. Thus, this claim also depends from and includes all of the limitations of Claims 158-163. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 185:**

This dependent claim adds the further detail to Claim 183, namely that the second layer has a density of 90 to 140 yarns per inch of 36/1 count yarn. This claim depends indirectly from multiple dependent Claim 181. Thus, this claim also depends from and includes all of the limitations of Claims 158-163. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 189:**

This dependent claim adds the further detail to Claim 186, namely that the metal fibers are independently selected from the group consisting of copper, gold, aluminum, silver and platinum. This claim depends indirectly from multiple dependent Claim 164. Thus, this claim also depends from and includes all of the limitations of Claims 158-163. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 190:**

This dependent claim adds the further detail to Claim 186, namely that one or more of the second yarns are glass fibers. This claim depends indirectly from multiple dependent Claim 164. Thus, this claim also depends from and includes all of the limitations of Claims 158-163. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim.

Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

**Claim 191:**

This dependent claim adds the further detail to Claim 186, namely that one or more of the first yarns are spun polyester yarns. This claim depends indirectly from multiple dependent Claim 164. Thus, this claim also depends from and includes all of the limitations of Claims 158-163. Nothing in Sabee teaches or suggests that the adhesive is located on **only one side** of the first yarns as required by this rejected claim. Accordingly, the Section 103(a) rejection should be reversed. Such action is respectfully requested.

For the foregoing reasons, Appellant respectfully submits that reversal of the Section 103(a) rejection of Claims 162, 163, 167, 168, 177, 180-185, and 189-191 is proper. Such action is respectfully requested.

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**Rejection No. 4:**

**Section 103(a) rejection over U.S. 3,591,434 with U.S. 5,294,258 and U.S. 3,753,842:**

Claims 168, 190 and 191 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hartstein (U.S. 3,591,434) and Jarrell (U.S. 5,294,258) as applied to claims 164 and 186 above, and further in view of Pittman (U.S. 3,753,842). Reversal of this rejection is respectfully requested.

The following comments apply to each of the rejected claims, which are further argued individually below. Appellant respectfully submits that these claims are NOT to be considered as a group herein, and that each claim is patentable individually for the reasons set forth here an as set forth below. Accordingly, the following comments relate to each of the rejected claims, but are provided here once for the Board's consideration. Appellant further argues each claim separately, below. Accordingly, each claim must be considered on its own merits.

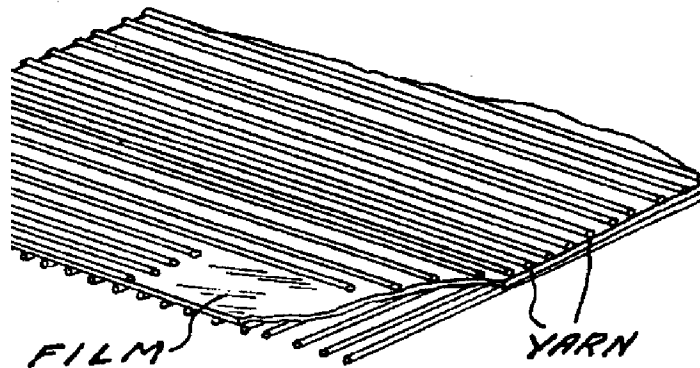
**General arguments against the Section 103(a) rejection of each of the claims:**

The proposed combination of Hartstein, Jarrell, and Pittman does not make Claims 169, 190 and 191 obvious, for the following reasons:

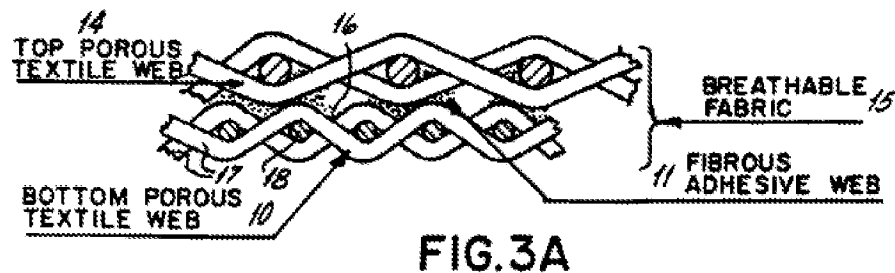
Hartstein and Jarrell have been distinguished above. In summary, Hartstein teaches a laminated product made from two sets of yarns with a solid film between them, as follows:



*Fig. 7.*

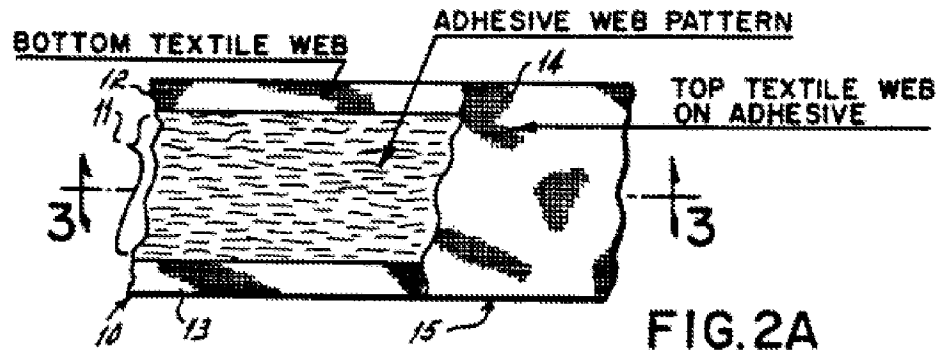


Jarrell teaches a breathable fabric, made from a sandwich of two fabric webs, connected in the center by an adhesive matrix:



These references teach nothing about the random, discontinuous bridges of adhesive claimed herein which hold a first layer of parallel yarns together. Hartstein has a self-supporting thermoplastic film as his adhesive for joining arrays of perpendicular yarns. Jarrell uses a fibrous adhesive web layer to join two independent webs of fabric (woven or non-woven) together. The adhesive web is described a matrix (Col. 5, lines 32-45),

and it is shown (Fig. 2A) as having uniform characteristics, e.g., as a random fibrous pattern, a dot matrix form, or a geometric pattern.



Pittman discloses a nonwoven fabric made by adhering overlying warp yarns to weft yarns with an adhesive. However, Pittman's adhesive is applied to his yarns by "dipping" the yarns or fabric in the adhesive or by "padding or spraying" the adhesive on the yarns or fabric to "coat" the yarns. See column 3, lines 2-12 and column 8, lines 2-15 of Pittman, repeated here:

The adhesive composition of the present invention may be applied to the yarns prior to formation of the fabric, or the adhesive may be applied to the fabric after the yarns have been oriented in the desired manner. The application of the adhesive can be accomplished by dipping the yarn or fabric in an emulsion or solution of the adhesive, preferably an aqueous emulsion of the adhesive, and thereafter squeezing the yarn or fabric to remove excess liquid and evenly distribute the adhesive on the yarn or fabric. Other techniques known in the art for applying liquids to fibers such as by padding or spraying can also be employed. The amount of adhesive composition incorporated into the fabric can vary over a wide range depending upon the nature of the yarn, the nature of the

adhesive composition, and the end use contemplated for the fabric. For example, where a stiff fabric is desirable, increased amounts of adhesive may be applied to the fabric without detracting from its utility whereas lesser amounts of adhesive or an additional plasticizer generally may be required if the desired product is to be soft and flexible.

The adhesive compositions of this invention have been found to be useful particularly in the preparation of non-woven textile fabrics, especially fabrics comprised of yarns composed of synthetic materials such as polyesters, polyethers and regenerated cellulose. The non-woven fabrics can be obtained by heat treating a non-woven fabric wherein the yarns have been coated with the adhesive composition of the invention. Coating of the yarns can be accomplished either by passing the yarns through an emulsion of the adhesive prior to formation of the fabric structure, or the fabric structure can be prepared and thereafter conveyed through an emulsion of the adhesive.

The structure and orientation of the yarns and fibers of the non-woven textile fabrics of this invention may be obtained by any of the processes known in the art. Although the adhesive compositions of this invention are useful for bonding non-woven fiber and filament products having a well defined oriented structure or fibrous mats in which the fibers or filaments are distributed haphazardly or in a random array, the adhesive is particularly useful for bonding textile fabric structures wherein the yarns are arranged in an, oriented pattern and bonded together at their crossing points., For example, as shown in FIG. 1, a layer of parallel fill yarns 10 is contacted with a layer of parallel warp, yarns 11, the warp and fill yarns intersecting at right angles. In FIG. 2, the warp and fill yarns of a fabric may be arranged so that the fill yarns 10 are substantially

parallel to each other although the warp yarns 11 are substantially parallel to each other although the warp yarns and fill yarns do not intersect at right angles.

Clearly, nothing in Pittman remedies the deficiencies of Hartstein and Jarrell. The proposed combination of art simply fails to make a prima facie case of obviousness against Claims 168, 190 and 191.

### **Specific Individual Claim Arguments:**

#### **Claim 168:**

This dependent claim adds the following detail to Claim 164, namely that one or more of the first yarns are glass fibers. Claim 164 depends from Claims 158-163, and provides the feature that the first yarns are selected from a Markush group, which includes glass fibers. Given that Claim 168 depends indirectly from Independent Claim 158, it is clear that the combined cited art fails to either teach or suggest the invention defined herein. There are no random bridges of adhesive between parallel first yarns taught or suggested by any single reference, or the combined teachings thereof.

#### **Claim 190:**

This dependent claim adds the following detail to Claim 186, namely that one or more of the second yarns are glass fibers. Claim 186 depends from Claim 164, discussed above, which provides that one or more of the first yarns are glass fibers. Claim 164 depends from Claims 158-163, and provides the feature that the first yarns are selected from a Markush group, which includes glass fibers. Given that Claim 190 depends indirectly from Independent Claim 158, it is clear that the combined cited art fails to either teach or suggest the invention defined herein. There are no random bridges of

adhesive between parallel first yarns taught or suggested by any single reference, or the combined teachings thereof.

**Claim 191:**

This dependent claim adds the following detail to Claim 186, namely that one or more of the first yarns are spun polyester yarns. Claim 186 depends from Claim 164, discussed above, which provides that one or more of the first yarns are glass fibers. Claim 164 depends from Claims 158-163, and provides the feature that the first yarns are selected from a Markush group, which includes glass fibers. Given that Claim 190 depends indirectly from Independent Claim 158, it is clear that the combined cited art fails to either teach or suggest the invention defined herein. There are no random bridges of adhesive between parallel first yarns taught or suggested by any single reference, or the combined teachings thereof.

Accordingly, the Section 103(a) rejection of Claims 168, 190 and 191 should be reversed. Such action is respectfully requested.

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**Rejection No. 5:**

**Section 103(a) rejection over U.S. 3,582,443 and U.S. 3,753,842:**

Claims 168, 190, and 191 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Sabee (U.S. 3,582,443) as applied to claims 164 and 186 above, and further in view of Pittman (U.S. 3,753,842). Reversal of this rejection is respectfully requested.

The following comments apply to each of the rejected claims, which are further argued individually below. Appellant respectfully submits that these claims are NOT to be considered as a group herein, and that each claim is patentable individually for the reasons set forth here and as set forth below. Accordingly, the following comments relate to each of the rejected claims, but are provided here once for the Board's consideration. Appellant further argues each claim separately, below. Accordingly, each claim must be considered on its own merits.

**General arguments against the Section 103(a) rejection of each of the claims:**

Sabee does not make the rejected claims obvious, because Sabee neither teaches nor suggests the claimed non-uniform, i.e., discontinuous, random bridges of adhesive applied to the first layer of yarns, as recited in Claim 158, which also carries through to the claims that depend indirectly with Claim 158, including Claim 168, Claim 190 and Claim 191. Likewise, these claims are all indirectly dependent upon Claim 159, which specifies that the adhesive is on only one side of the first yarns. Nothing in Sabee teaches or suggests any such placement of adhesive. Instead, Sabee shows that his adhesive goes everywhere.

Pittman discloses a nonwoven fabric made by adhering overlying warp yarns to weft yarns with an adhesive. However, Pittman's adhesive is applied to his yarns by "dipping" the yarns or fabric in the adhesive or by "padding or spraying" the adhesive on the yarns or fabric to "coat" the yarns. See column 3, lines 2-12 and column 8, lines 2-15 of Pittman, repeated here:

The adhesive composition of the present invention may be applied to the yarns prior to formation of the fabric, or the adhesive may be applied to the fabric after the yarns have been oriented in the desired manner. The application of the adhesive can be accomplished by dipping the yarn or fabric in an emulsion or solution of the adhesive, preferably an aqueous emulsion of the adhesive, and thereafter squeezing the yarn or fabric to remove excess liquid and evenly distribute the adhesive on the yarn or fabric. Other techniques known in the art for applying liquids to fibers such as by padding or spraying can also be employed. The amount of adhesive composition incorporated into the fabric can vary over a wide range depending upon the nature of the yarn, the nature of the adhesive composition, and the end use contemplated for the fabric. For example, where a stiff fabric is desirable, increased amounts of adhesive may be applied to the fabric without detracting from its utility whereas lesser amounts of adhesive or an additional plasticizer generally may be required if the desired product is to be soft and flexible.

The adhesive compositions of this invention have been found to be useful particularly in the preparation of non-woven textile fabrics, especially fabrics comprised of yarns composed of synthetic materials such as polyesters, polyethers and regenerated cellulose. The non-woven fabrics can be obtained by heat treating a non-woven fabric wherein the yarns have been coated with the adhesive composition of the invention. Coating of the yarns can be accomplished

either by passing the yarns through an emulsion of the adhesive prior to formation of the fabric structure, or the fabric structure can be prepared and thereafter conveyed through an emulsion of the adhesive.

The structure and orientation of the yarns and fibers of the non-woven textile fabrics of this invention may be obtained by any of the processes known in the art. Although the adhesive compositions of this invention are useful for bonding non-woven fiber and filament products having a well defined oriented structure or fibrous mats in which the fibers or filaments are distributed haphazardly or in a random array, the adhesive is particularly useful for bonding textile fabric structures wherein the yarns are arranged in an, oriented pattern and bonded together at their crossing points., For example, as shown in FIG. 1, a layer of parallel fill yarns 10 is contacted with a layer of parallel warp, yarns 11, the warp and fill yarns intersecting at right angles. In FIG. 2, the warp and fill yarns of a fabric may be arranged so that the fill yarns 10 are substantially parallel to each other although the warp yarns 11 are substantially parallel to each other although the warp yarns and fill yarns do not intersect at right angles.

Clearly, nothing in Pittman remedies the deficiencies of Hartstein and Jarrell. The proposed combination of art simply fails to make a prima facie case of obviousness against Claims 168, 190 and 191.

#### **Specific Individual Claim Arguments:**

##### **Claim 168:**

This dependent claim adds the following detail to Claim 164, namely that one or more of the first yarns are glass fibers. Claim 164 depends from Claims 158-163, and



provides the feature that the first yarns are selected from a Markush group, which includes glass fibers. Given that Claim 168 depends indirectly from Independent Claim 158, it is clear that the combined cited art fails to either teach or suggest the invention defined herein. There are no random bridges of adhesive between parallel first yarns taught or suggested by any single reference, or the combined teachings thereof.

**Claim 190:**

This dependent claim adds the following detail to Claim 186, namely that one or more of the second yarns are glass fibers. Claim 186 depends from Claim 164, discussed above, which provides that one or more of the first yarns are glass fibers. Claim 164 depends from Claims 158-163, and provides the feature that the first yarns are selected from a Markush group, which includes glass fibers. Given that Claim 190 depends indirectly from Independent Claim 158, it is clear that the combined cited art fails to either teach or suggest the invention defined herein. There are no random bridges of adhesive between parallel first yarns taught or suggested by any single reference, or the combined teachings thereof.

**Claim 191:**

This dependent claim adds the following detail to Claim 186, namely that one or more of the first yarns are spun polyester yarns. Claim 186 depends from Claim 164, discussed above, which provides that one or more of the first yarns are glass fibers. Claim 164 depends from Claims 158-163, and provides the feature that the first yarns are selected from a Markush group, which includes glass fibers. Given that Claim 190 depends indirectly from Independent Claim 158, it is clear that the combined cited art fails to either teach or suggest the invention defined herein. There are no random bridges

of adhesive between parallel first yarns taught or suggested by any single reference, or the combined teachings thereof.

Accordingly, the Section 103(a) rejection of Claims 168, 190 and 191 should be reversed. Such action is respectfully requested.

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**Conclusion:**

For the reasons set forth above, Appellant respectfully requests that the Board reverse the Examiner in this application.

**FEE AUTHORIZATION**

Please charge all fees due in connection with this filing to our Deposit Account – No. 19-0733.

Respectfully submitted,

/Ernest V. Linek/

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Date: 20 November 2006

**(viii) Claims appendix (clean copy, double spaced):**

158. A nonwoven fabric comprising:

a first layer of substantially parallel first yarns; and

a second layer of substantially parallel second yarns;

the first and second yarns being substantially perpendicular to one another and the first and second layers being adhered together with an adhesive, wherein:

(a) the adhesive is applied to one side of the first layer of substantially parallel yarns in a discontinuous manner;

(b) the adhesive forms random bridges between substantially parallel yarns of the first layer; and

(c) the adhesive is located substantially only between the first and second layers of the adhered together substantially perpendicular yarns.

159. The nonwoven fabric of claim 158, wherein the adhesive is on only one side of the first yarns.

160. The nonwoven fabric of claim 159, wherein the substantially parallel first yarns in the first layer are held together to form a sheet by the bridges of the adhesive which prevent twisting of the individual first yarns in the first layer.

161. The nonwoven fabric of claim 159, wherein the adhesive is on the one side of the first yarns at a level of from about 5 weight percent to about 25 weight percent, based upon the total weight of the sheet of the first yarns.

162. The nonwoven fabric of claim 161, wherein the total weight of the sheet of the first yarns is about  $50 \text{ g/m}^2$  and the adhesive weight is about 2 to  $15 \text{ g/m}^2$ .

163. The nonwoven fabric of claim 161, wherein the total weight of the sheet of the first yarns is about  $50 \text{ g/m}^2$  and the adhesive weight is about 5 to  $10 \text{ g/m}^2$ .

164. The nonwoven fabric of any one of claims 158-163, wherein the first yarns are selected from the group consisting of polymer fibers, natural fibers, synthetic fibers, composite fibers, carbon fibers, glass fibers, metallic fibers and graphite.

165. The nonwoven fabric of claim 164, wherein the polymer fibers are selected from the group consisting of polyester, polyethylene, rayon, polypropylene and nylon fibers.

166. The nonwoven fabric of claim 164, wherein the natural fibers are selected from the group consisting of cotton fibers and wool fibers.

167. The nonwoven fabric of claim 164, wherein the metal fibers are selected from the group consisting of copper, gold, aluminum, silver and platinum.

168. The nonwoven fabric of claim 164, wherein one or more of the first yarns are glass fibers.

169. The nonwoven fabric of any one of claims 158-163, wherein the substantially parallel first yarns have been formed in a warp-direction and supported and bonded on only one side by the adhesive.

170. The nonwoven fabric of claim 169, wherein the adhesive has been applied to the first yarns by dip/nip saturation, spraying, gravure coating, or kiss coating.

171. The nonwoven fabric of claim 170, wherein the adhesive has a thickness of about 0.25 mil to about 1 mil.

172. The nonwoven fabric of claim 170, wherein the adhesive is a heat activatable adhesive.

173. The nonwoven fabric of claim 172, wherein the adhesive is a hot melt adhesive.

174. The nonwoven fabric of claim 173, wherein the adhesive is a hot melt copolyester polymer.

175. The nonwoven fabric of claim 170, wherein the adhesive is a scrim or lace web of adhesive or a meltblown adhesive.

176. The nonwoven fabric of any one of claims 158-163, wherein the adhesive is from about 5 to 20 percent by weight of the total weight of the fabric.

177. The nonwoven fabric of claim 176, wherein the adhesive is from about 10 to 15 percent by weight of the total weight of the fabric.

178. The nonwoven fabric of any one of claims 158-163, wherein the second yarns extend at an angle of about 80 degrees to about 89.7 degrees relative to the first yarns.

179. The nonwoven fabric of claim 178, wherein the second yarns extend at an angle of about 85 to about 89.7 degrees relative to the first yarns.

180. The nonwoven fabric of any one of claims 158-163, wherein the first yarns are equally spaced apart and the second yarns are equally spaced apart.

181. The nonwoven fabric of any one of claims 158-163, wherein the first layer and/or the second layer has a density of at least 40 yarns per inch in a transverse direction of the yarns.

182. The nonwoven fabric of claim 181, wherein the first layer and/or the second layer has a density of between 40 and 140 yarns per inch in a transverse direction of the yarns.

183. The nonwoven fabric of claim 182, wherein the first layer and/or the second layer has a density of between 60 and 100 yarns per inch in a transverse direction of the yarns.

184. The nonwoven fabric of claim 183, wherein the first layer has a density of 40 to 90 yarns per inch of 30/1 to 36/1 count yarn.

185. The nonwoven fabric of claim 183, wherein the second layer has a density of 90 to 140 yarns per inch of 36/1 count yarn.

186. The nonwoven fabric of claim 164, wherein the second yarns are selected from the group consisting of polymer fibers, natural fibers, synthetic fibers, composite fibers, carbon fibers, glass fibers, metallic fibers and graphite.



187. The nonwoven fabric of claim 186, wherein the polymer fibers are selected from the group consisting of polyester, polyethylene, rayon, polypropylene and nylon fibers.

188. The nonwoven fabric of claim 186, wherein the natural fibers are selected from the group consisting of cotton fibers and wool fibers.

189. The nonwoven fabric of claim 186, wherein the metal fibers are independently selected from the group consisting of copper, gold, aluminum, silver and platinum.

190. The nonwoven fabric of claim 186, wherein one or more of the second yarns are glass fibers.

191. The nonwoven fabric of claim 186, wherein one or more of the first yarns are spun polyester yarns.

192. The nonwoven fabric of claim 186, wherein one or more of the second yarns are single strand cotton yarns.

193. The nonwoven fabric of claim 169, wherein the second yarns have been formed in a weft-direction and a side of the second yarns are supported by, and adhered to, the one side of the first yarns by the adhesive, applied to only the one side of the first yarns.

194. The nonwoven fabric of claim 193 which has a weft-direction strength equal to its warp-direction strength.

195. The nonwoven fabric of claim 193, wherein the denier of all the first and second yarns is approximately the same.

196. The nonwoven fabric of claim 193, wherein the denier of some of the first yarns is different and/or the denier of some of the second yarns is different.

197. The nonwoven fabric of claim 193, wherein the denier of all the first yarns is the same and the denier of all the second yarns is the same.

198. The nonwoven fabric of claim 193, wherein the denier of the first yarns is different from the denier of the second yarns.

199. The nonwoven fabric of claim 193, wherein some of the second yarns are of a smaller denier than the first yarns.

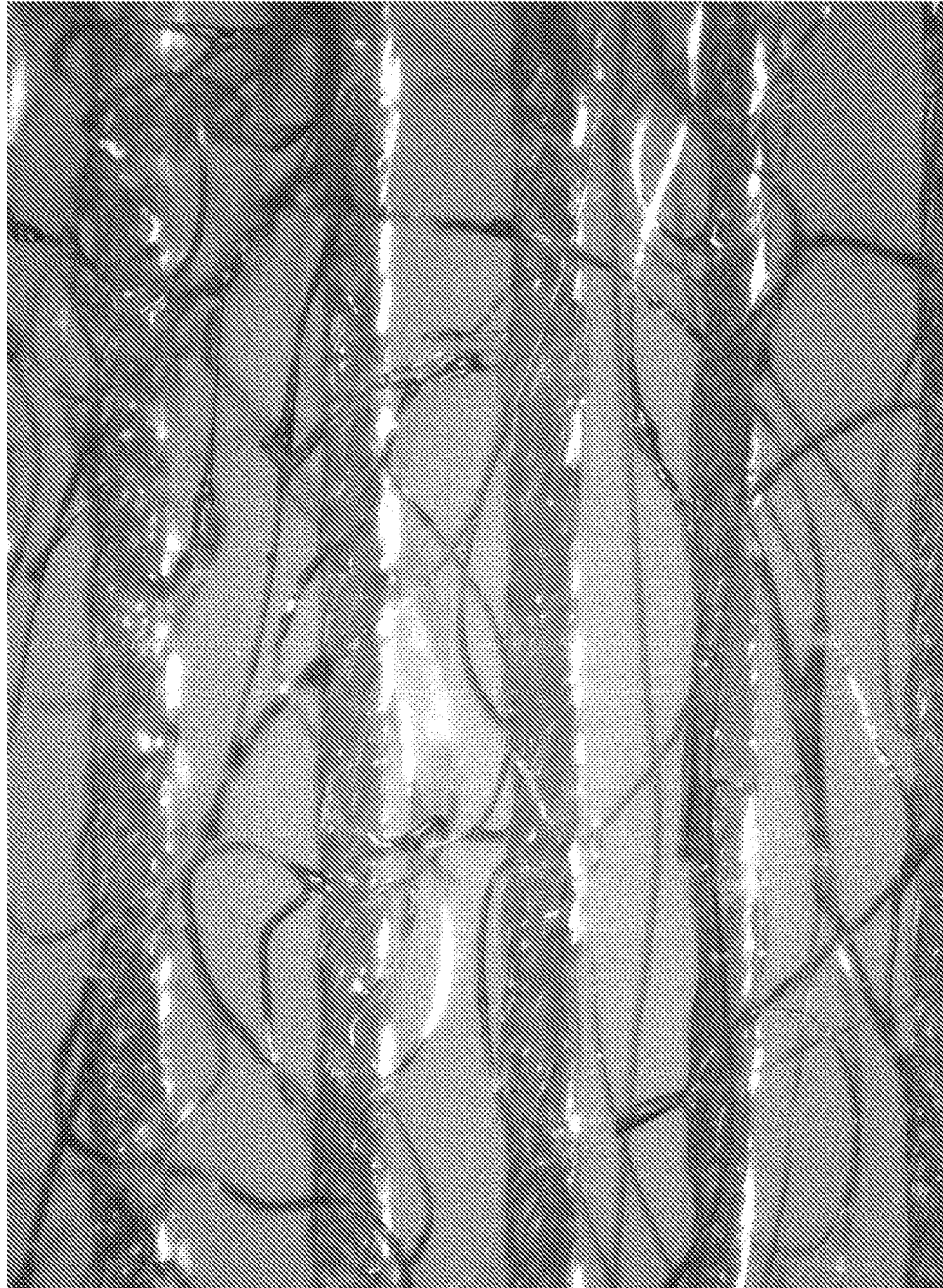
**(ix) Evidence appendix:**

Appellant believes that the prior art cited by the Examiner in support of the rejections need not be attached here, as these documents are already part of the record in this appeal.

Attached are color copies of Figures 61A and 61B which provide a better view of the adhesive bridges claimed herein.

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Color Fig. 61A:



Color Fig. 61B:



**(x) Related proceedings index:**

None.